Program Management Review Reference Guide

December 14, 2012

Version 1.0

December 13, 2012

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This document provides background information and serves as a reference guide regarding the 2020 Census Program's research and testing phase Program Management Review (PMR) presentations. The reviews are intended to provide internal and external Census program stakeholders with a broad and timely status of the operations' planning and development projects thereby facilitating strategic guidance and information sharing.

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2020 Census Research and Testing -- Program Overview

In FY 13 and FY 14, we will be in the field testing a wide range of new operations designed to reduce costs while maintaining a high quality census. This is largely work we are doing for the first time. We need to perfect self-response, Internet-based options, determine the extent to which we can conduct a targeted address canvassing operation, and figure out if we can use administrative records to enumerate a significant portion of the households that do not return a census questionnaire. We also need to develop new methodologies that integrate and automate the activities that staff conduct in the field. Mounting the field staff needed to check addresses and conduct face-to-face interviews is the most expensive component of the census. While we know an extensive field staff will be needed regardless of the breakthroughs we make with administrative records and targeted address canvassing, the more we can cut back on this staff, and enable them to work more efficiently, the more we can contain the costs of the census.

In this early phase of the census cycle, we are developing methodologies for all of this that needs to be examined in a census-like environment. Some of this can be accomplished through the analysis of 2010 data, and data from the American Community Survey, but many components of the Census design we are building need to be tested through the activities of census staff functioning in the field.

In the 2010 Census, we opened and staffed 12 Regional Census Centers and 494 Local Census Offices. The staff in these offices processed the case assignments for 600,000 employees, received and scanned their data, and processed their payroll information. Staff reviewed enumerator work to ensure its quality and directly supervised enumerators through a layered management structure deployed through these offices. Enumerators received verbatim training at over 35,000 locations across the country.

In 2020, applications on a mobile device will train enumerators and provide case assignments updated nightly or in real time. Those enumerators will transmit the data they collect and their payroll information back to Headquarters using those devices. Quality assurance operations will be conducted in part by examining the paradata on the devices, and also by analyzing the administrative data we have on the households being enumerated. We think that much of this will happen in real time. In order to accomplish this we need to automate and integrate Census business processes so that they can be deployed in a virtual environment. We have never done this before on such a scale.

The FY13 and FY14 budget requests provide the tools and capabilities required to implement and test operational innovations that will make it possible for us to automate field activities and streamline a broad range of decennial activities. These resources enable us to develop and test new methodologies based on:

- New business processes using “business process modeling” tools;

- Enumeration, listing and mapping software and systems that form the basis of field activities;
- Methods for transmitting data across systems maintained on mobile devices so that field activities are effectively supported;
- mobile architectures that will support multiple automated operational design alternatives;
- Control system software to track and manage work in the field;
- Workflow management and routing software; and
- Case management software.

We recognize that technology is going to evolve, and we are not testing the hardware and software we plan to use in the 2020 Census. Rather, we are developing the operational methodologies that will allow us to integrate and automate census business processes in a virtual environment.

The hardware we are purchasing, the software we're developing, and the tests we will conduct in FY 14 will enable us to:

- Measure initial coverage of our contact frame and the ability for us to link alternative sources of data to the MAF/TIGER database;
- Evaluate the quality of our Master Address File using newly developed statistical error models and business rules;
- Examine the feasibility of integrating multiple self-response modes (telephone, paper, Internet), the optimal timing of those modes, and the optimal non-response followup contact strategies utilizing different modes;
- Integrate workload management, field infrastructure, logistics and training, enumeration and quality control on a mobile device; and,
- Examine our ability to use administrative records in field enumeration and quality control operations, and the impact of these innovations on quality and coverage.

In addition to this work to develop administrative records based operations, targeted address canvassing, and the re-design of contact strategies and field operations that will enable us to leverage new technologies, we also are reengineering headquarters IT infrastructure to establish integrated cross-program capabilities. 2020 research and testing is central to these corporate efforts as well.

We are attempting to fundamentally re-design the census and develop an entirely new way of conducting Decennial Census operations in an automated and integrated environment. If the projects receive less funding than we need, we will not be able to test key methodological and operational innovations early in the decade. Funding at lower levels than our requests also reduces our ability to implement strong Program Management and Systems Engineering and Integration processes intended to prevent the recurrence of problems experienced in 2010 including late design decisions, late development, and cost overruns.

The research and testing for the key elements of a new census design must happen in the next two years so that we have time to develop and implement these new operations without putting the census at risk. Insufficient funding will force us to push much of this work to later years. This means that we will not be able to make key by the end of FY14 as planned. Pushing these decisions to FY15 and beyond will tighten the schedule for developing, testing and implementing the systems and databases needed for a new census design. This will significantly increase our risk for operational failures and cost overruns.

Background Information for Research Project Presentations

Geographic Programs Related Research Projects Program Manager: Maryann Chapin		
WBS # 3.101	Project Team Name: Master Address File (MAF) Error Model	Team Lead/Project Manager: Robin Pennington
Project Description	This project develops a statistical MAF error model for Living Quarters. • Use administrative records and American Community Survey (ACS) to conduct quality checks; potentially will use Demographic Area Address Listing (DAAL) and/or Population Division (POP) Housing Unit (HU) estimates as well. • Establish undercoverage/overcoverage metrics. • Use the quality of the 2010 MAF as a benchmark. • Annually update the model as appropriate to represent changes in MAF maintenance. • Note: This quantitative error analysis supports the Geographic Support Systems (GSS) initiative from a statistical perspective. Consider wide array of stakeholders, Census Coverage Measurement (CCM), American Community Survey Office (ACSO), and Current Surveys.	
WBS # 3.102	Project Team Name: Independent MAF Quality Assessment	Team Lead/Project Manager: Robin Pennington
Project Description	This project identifies, tests, and refines options that assess the quality of the MAF. • Create a measure of coverage of the MAF that work in concert with related measures resulting from the GSS initiative to create a complete picture of the quality of the MAF as an address frame. • Research methods and sources that could validate the MAF error model • Develop validation methods of accuracy and determine the cost benefit. • Consider wide array of stakeholders, including the American Community Survey Office (ACSO) and Current Surveys.	
WBS # 3.103	Project Team Name: Local Update of Census Addresses (LUCA) Program Improvement	Team Lead/Project Manager: Brian Timko
Project Description	This project examines how to improve the current LUCA process, especially in light of potential changes to Address Canvassing. • Review the existing LUCA legal and policy requirements. • Identify new data sources/technology that would improve both the process and quality of LUCA. Review new data sources and technology; determine whether or not they should be incorporated into LUCA. • Quantify how the model(s) will improve the quality of the data received and incorporate into the process. • Determine how to streamline the process and improve the quality of the data. • Determine how partners submitting address and spatial data under the GSS	

	Initiative impact the LUCA program. • Recommend final modifications to LUCA.	
WBS # 4.107	Project Team Name: Non-ID Processing	Team Lead/Project Manager: Frank McPhillips
Project Description	This project evaluates methods to geocode non-ID cases near real-time and ensuring appropriate security measures are in place. • Research methods other than fieldwork for verification of geography. • Research methods for interactive "live" geocoding during respondent-initiated responses and fieldwork. • Research effectiveness of ways to link response data to Master Address File (MAF)-ID/Census ID if no ID is provided. • Develop better strategies for obtaining and verifying a geocode for late-adds (received after Field Verification Operation: e.g., Be Counted and Telephone Questionnaire Assistance (TQA) forms). • Verify that new respondent-driven geocoding process meets necessary security and privacy requirements. • Identify procedures for cases where the physical address is new/not linked to the MAF.	
WBS # 8.101	Project Team Name: Improving Quality Control (QC)	Team Lead/Project Manager: R.J. Marquette
Project Description	This project researches how QC design for operations can be improved to be more effective/efficient (QC processes other than those related to field QC activities are covered in all of the other projects). • Research feasibility of using Global Positioning System (GPS) data to determine (1) if field staff appropriately visited housing units for listing and enumeration; (2) if GPS coordinates, or lack thereof, are good predictors of data falsification or poor field staff performance; (3) can GPS data be used to reduce or eliminate field quality control checks. • Research feasibility of using Administrative records data in lieu of field work for QC. • Research ways to detect data falsification at a Local Census Office level. • Research ways to predict falsification and poor listing work using statistical models. • Research automating the observation form.	
WBS # 8.108	Project Team Name: Field Staff Training	Team Lead/Project Manager: Bryn Johnson
Project Description	This project examines approaches to modernizing and improving the cost efficiency of field staff training; field enumeration projects will ensure that training requirements are provided. • Research private sector training techniques for implementation in 2020 Census training. • Research strategies to ensure training tools are common across operations.	

	• Research how training for temporary staff can be improved. • Look at mobilization and training approaches for disaster relief efforts. • Research using audio visual aids, computer based training, web roll out in lieu of kit prep, and at-home training. • Research module-based training. • Research government and private sector training techniques, including research and automation already completed at the Census Bureau. • Research approaches for decreasing the time needed for classroom training. • Investigate the use of reference materials, such as manuals and job aids for field staff. • Consider wide array of stakeholders, including Census Coverage Measurement, American Community Survey Office, and Demographic Surveys .

Systems Related Research Projects Program Manager: Andrea Brinson		
WBS # 4.102	Project Team Name: Reducing and Improving Person Follow-up Operations	Team Lead/Project Manager: Darlene Monaco
Project Description	The project will research and test ways of reducing the cost of in-person follow-up on cases sent to the field while maintaining quality. • The project will determine the optimum number of follow-up contacts with respondents by mode (telephone and in-person). • Investigate tailoring non-response contact (including optimizing strategies for reducing the number of non-response contacts) and collection approaches by geography and/or demographics and include a review of hard-to-enumerate areas' response patterns in all research. • Conduct time and motion or other studies of enumerator work to determine how to develop efficiencies within tasks and workflow. • Review field operations conducted during the 2010 Census and recommend ways to streamline the overall Census field workflow to reduce cost, while maintaining quality. • Investigate the number and type of field operations needed • Investigate ways to optimize the enumeration timeline, which will include research on the impact (cost and quality) of varying the follow-up response window, the length (number of weeks) of field data collection for enumeration operations, and the overall timeline for all person follow-up operations • Research field staff pay rate methodology to determine the optimum pay rates, based on economic conditions by geography. The methodology will be used for budget modeling and pay rate development purposes.	
WBS # 4.101	Project Team Name: Automating Field Activities	Team Lead/Project Manager: Jay Occhiogrosso
Project Description	This project explores research options for the automation of field activities including address listing and enumeration. • Existing field infrastructure and systems will be used to support field tests when suitable; meanwhile, components of emerging new field infrastructure and systems must be tested. • Research and development of instruments (address listing and enumeration), an Operational Control System, and components of payroll and personnel. • Examine feasibility of cross-program solutions, including the American Community Survey (ACS). • Examine feasibility of commercially available hardware-independent solutions and systems. • Develop prototypes to support field tests. • Examine the integrate training into the technology solution. • Research an automated and centralized dispatch system for field enumerators.	

	• Research the ability to determine enumerator routing given the day's caseload and any extenuating circumstances (e.g., road closures, natural disasters, and local holidays). • Examine how the Global Positioning Systems (GPS) can facilitate remote management, case supervision, and provide support for quality control. • Write the questionnaire software according to specs provided by project 4.105. • Examine the feasibility of software applications developed for cross-platform use (e.g. Windows, Android, iOS). • Research the effects of different form factors (smart phones, small tablets, large tablets, laptops) on the data collection effort from an efficiency and data accuracy standpoint.	
WBS # 4.104	Project Team Name: Workload Management Systems	Team Lead/Project Manager: Guin Mills
Project Description	This project provides the application development support for all projects requiring headquarter's workload management. Due to the plan to build on ACS Internet research, this project will also provide the Internet application based on requirements from Optimizing Self Response 4.103. • Existing workload management systems will be used to support field tests when suitable; meanwhile, components of emerging new workload management must be tested; operational focus projects will provide requirements. • Examine feasiblity of cross-program solutions, including the American Community Survey (ACS). • Examine the benefits of using the USPS' barcode tracking system for workload management. • Includes all relevant external interfaces to HQ systems. • Investigate how to take advantage of real-time case management solutions to implement more flexibility in response options and worker supervision. • Develops applications in support of the IT Infrastructure project (6810105/8.105) and to Field Automation (6410101/6411101/4.101). • Examine the Enterprise Processes and timeline from notification through data capture and response processing to Census Unedited File (CUF) development. • Includes applications for HQ Workload Management, HQ Web Hosting,Response Processing System (RPS), Universe Control and Management (UCM), Cost and Progress (C&P), Census Matching, Reviewing, and Coding System (MaRCS), components of Decennial Response Integration System (DRIS) and potentially components of Operations Control System (OCS) and Decennial Applicant, Personnel, and Payroll System (DAPPS).	
WBS # 8.109	Project Team Name: Logistics Management Field Infrastructure Study	Team Lead/Project Manager: Sari Anderson
Project Description	In support of the project's field infrastrure[1] objectives: • This project will develop two to four alternative field infrastrucure designs that	

	consider the use of technology[2] and other resources to reenginer the field office structure and organizational structure deployed to support field operations during a decennial census. • This project will leverage lessons learned and successes achieved by Field Directorate during the 2010 Census, to implement a field infrastructure that will support its decennial work demands. • This project will leverage lessons learned and successes achieved by Field Division during the implementation of the field reorganization of the Regional Offices implemented in 2012. • Examine whether scope of field infrastructure solutions can be applied to Island areas. • This project will examine the impact of the source of the data collection device on the field infrastructure (e.g. whether field staff bring their own devices to conduct data collection, are provided with government furnished equipment, or some combination thereof.) In support of the project's logistics support objectives: • This logistics management/support portion of this project will serve as an expansion of the Integrated Logistics Management Study being conducted as part of the Operational Efficiency program. • This project will leverage lessons learned and successes achieved at the National Processing Center (NPC) during the 2010 Census to implement a robust materials planning and control system. • This project will look at ways to reduce costs of logistics for paper, office supplies, equipment, promotional items, kits, and other materials related to field data collection support. • This project will examine the impact of the source of the data collection device on the logistics management/support (e.g. whether field staff bring their own devices to conduct data collection, are provided with government furnished equipment, or some combination thereof.) • Recommend logistics support solutions that use appropriate interfaces to permit on-demand response to customer demand requirements and appropriate and fully-compliant inventory reporting. • Examine whether scope of logistics management solutions can be applied to Island areas. [1] Project Description shown is a working description and is not the final approved description, as the team is still working on defining scope. [2] For the purpose of this project, field infrastructure is defined as office, warehouse, and other physical space used to support field operations and the regional and local staffing structure used for support the conduct of field operations or conduct field operations work. [3] Although the team will determine the capabilities needed to support the field infrastructure, it will not recommend specific IT infrastructure solutions or develop the IT infrastructure needed to support the field infrastructure design.

WBS # 8.110	Project Team Name: Virtual Local Census Office (LCO) to LCO Test Bed	Team Lead/Project Manager: Douglas Curtner
Project Description	This project examines options for a virtual LCO; develops the virtual LCO; then deploys the design to a small LCO test bed. • Maintains the virtual LCO concurrent with test bed. Develop a new environment to model LCO functions and applications for process improvement and early prototype development. • Stand up a small LCO near a regional office to support field related tests and to provide infrastructure for prototyping processes and systems. • Supports 2014 Systems Integration (Test 28) and 2014 Census Test (Test 29) operational field tests. • Track and address/minimize latency issues if they arise in LCO. • Consider wide array of stakeholders, including Census Coverage Measurement, American Community Survey Office, and Demographic Surveys. • Results from the LCO test bed are used to inform 2020 Census design.	

Content and Outreach-Related Research Projects Program Manager: Adrienne Oneto		
WBS # 8.106	Project Team Name: Contact Frame	Team Lead/Project Manager: David Sheppard
Project Description	This project researches whether alternatives to mail out and mail back can be used to effectively contact respondents. • Research additional contact frames with either high or targeted coverage, including smart phone, email, P.O. box, social networking, and landline frames. • Assess the implications of linking additional contact frames information on the MAF. • Review options for new partnerships in order to get additional contact information lists (e-mail, smart phone, etc) for new solicitation/reminder methods (Includes Supplementing Contact Frame with AdRec). • Requires matching algorithm/software for matching on a set of addresses or telephone numbers that are stored and available. • Requires matching algorithm/software for using three or more lists simultaneously. The idea is to use third-party lists to facilitate the matching of the main A and B lists • Given multiple contact options, develop an algorithmn for rank order. • Develop maintenance protocol as appropriate for uses of alternate contact frame. • Consider wide array of stakeholders, including Census Coverage Measurement, American Community Survey Office, and Demographic Surveys.	

WBS # 4.103	Project Team Name: Optimizing Self Response	Team Lead/Project Manager: Jane Ingold
Project Description	This project is subject-matter focused and provides requirements to the IT projects (4.101, 4.104, & 2.105/8.103). • This project coordinates closely with 4.102 Reducing and Improving Person Follow-up Operations in order to optimize the enumeration timeline. • Examine Internet response protocols: focus on cost savings and ease of use. • Examine Telephone response protocols for self-response. This will encompass the IT Response Infrastructure. • Examine different strategies for notify/remind/collect to optimize self-response (including postcard initial contact study and Global Positioning System (GPS) Address Study). • Examine alternate contact methods (e.g., Interactive Voice Response (IVR), text, email, social networking) and the use of different methods for different demographic groups. • Research the impacts of increasing response mode options on workload and operational complexity. • Research ways to address person-based response issue,s such as multiple emails responses from the same household. • Estimate expected cost benefit of paperless self response, in terms of reduced followup, for different demographic groups and different housing unit types, including large households. • Evaluate effect of multiple response methods on public perception, differential coverage, and consistency of response. • Must be aware of cost versus benefits of different modes and whether mode interfaces are feasible. • Research optimal design for Language Assistance Guide Booklet. • Research multi-cultural/multi-language outreach to provide content to websites catering to immigrant and foreign populations. • Optimize mail strategy for non-English language population. • Investigate developing an electronic contact strategy for non-English language population. • Coordinate closely with IT security to ensure confidentiality, integrity, and accessibility, and data management measures required when using electronic modes. • Include hard-to-enumerate areas' response patterns in all research. • Determine how to partition the initial enumeration universe (based on optimal contact methods and gaps in coverage from strategies) (replace Types of Enumeration Areas).	

WBS # 8.104	Project Team Name: Privacy and Confidentiality Study	Team Lead/Project Manager: Jennifer Hunter Childs
Project Description	This project researches methods to understand privacy and confidentiality concerns, as well as methods for addressing privacy and confidentiality these concerns and the impacts (public perception). • Assess stakeholder expectations and current perceptions via attitudinal surveys. • Research impact of administrative records on privacy and confidentiality. • Research methods for addressing privacy and confidentiality concerns and impacts on response. • Research methods for addressing privacy and confidentiality concerns related to proposed methods for coding, editing, imputation, and non-ID processing at time of interview. • Research laws and concerns related to linking email addresses and/or other contact methods to existing address records as is planned in Project 6810104/8.104. • Consider wide array of stakeholders, including Census Coverage Measurement, American Community Survey Office, and Demographic Surveys. •	
WBS # 4.105	Project Team Name: Questionnaire Content, Design and Mode Study	Team Lead/Project Manager: Jane Ingold
Project Description	This project examines the impact of multiple language questionnaire options via multiple modes (eg. Internet, telephone, personal, paper, Interactive Voice Response) on potential bias, cognition, and feasibility. • Refine census questionnaires and supporting materials within the cultural context of the respondents including the appropriate translations. • For each language in which the census form will be available, test translations for accuracy and cultural appropriateness for several versions of questions. • What are the cost/benefits of alternative designs for bilingual questionnaires in more languages? • What are the cost/benefits for expansion of the single form into more languages by mode? • How do we optimize the mix of guides versus questionnaires over quality and cost? • Is the content translated correctly and what are the cultural impacts of the questions? • Research accessibility requirements. • Consider wide array of stakeholders, including the American Community Survey Office (ACSO) and Demographic Surveys.	

WBS # 4.106	Project Team Name: Multiple Mode Interface Study	Team Lead/Project Manager: TBA
Project Description	This project evaluates and validates the questionnaire design content by interface. (note: For this project, "interface" refers to human-survey instrument interfaces and/or platform-platform interfaces.) • Test human-survey interfaces on different devices (touch versus type; blackberry versus notebook; etc.) including settings within devices. • Test how human-survey interface can include platform-platform interfaces to administrative records for validation or other needs. • May include mapping and other capabilities to assist with identifying existing address and linking to Census ID. The concern is to prevent the respondent from entering incorrect, incomplete, or missing housing data that doesn't match with the validated housing frame. • Lab-based experiments for this project must be completed prior to major field activities in FY 2014. • Consider wide array of stakeholders, including American Community Survey Office and Demographic Surveys.	

Evaluation and Experiments Related Research Projects Program Manager: Kevin Deardorff		
WBS # 8.102	Project Team Name: Administrative Records Fitness-For-Use	Team Lead/Project Manager: Amy Ohara
Project Description	This project builds on work conducted as part of the Census Program of Evaluations and Experiements (CPEX) Census Match Study to explore the feasibility of using administrative records in te 2020 Census. • Assess data sources to support decennial census functions (non-response, coverage measurement, response editing, and item and whole-household imputation. • Identify files from the Census Bureau, other Federal and State agencies, and commercial administrative vendors that provide information on persons, housing units, and demographic characteristics. • Investigate expanding and enhancing Person Identification Validation System unduplicate and match person and address information across files. • Consider wide array of stakeholders, including Census Coverage Measurement American Community Survey Office, and Demographic Surveys.	
WBS # 8.107	Project Team Name: Administrative Records Modeling	Team Lead/Project Manager: Tom Mule
Project Description	This project researches potential use of administrative records in non response applications, especially to reduce non response followup workload. • Conduct research on using administrative records to inform, replace, or augment response. • Conduct a number of scenarios on using administrative records as a proxy to response throughout the six contact cycle. • Determine if administrative records can be used for whole household or expanded item imputation. • Examine the biases in the data and thus the trade-offs by demographics and geography were one to use administrative records for substantial amounts of imputation. • Conduct research to show whether substituting administrative record data did not distort macro level data on total number of persons and some important characteristics -- primarily the variables that are important for analyses and may have impact on number and formation of congressional districts. Research may show differences between census data with and without Admin record substitution. But it would be useful to consider tradeoffs and discuss with stakeholders. The macro level analysis could be done at block, tract or local govt. level. • Consider wide array of stakeholders, including Census Coverage Measurement, American Community Survey Office, and Demographic Surveys. • Include hard-to-enumerate areas' response patterns in all research.	
WBS # 5.101	Project Team Name: Coding, Editing and Imputation Study	Team Lead/Project Manager: Pat Cantwell
Project Description	This project examines methods, data sources, and computing systems to improve the current processes for cout imputation, characteristic imputation and editing, and coding of write-ins for race and Hispanic origin. • Determine how we can use administrative records to improve these processes.	

	• Determine ways to improve these processes *without* the use of administrative records. • Examine the use of statistical models in this work. • Research the feasibility of coding, editing, and imputation during data capture, for either live interactive respondent applications or overnight use. • Examine other statistical methods, including the Census Bureau's *TEA* system and the Statistics Canada's Census Edit and Imputation System. • Take advantage of Census 2010 data and other sources during this study. • Consider effects on data processing at all stages.	
WBS # 8.105	Project Team Name: Matching Process Improvement	Team Lead/Project Manager: Susanne Johnson
Project Description	This project thoroughly researches and assesses matching techniques, both existing and emerging, to ensure high quality entity resolution for both address and person matching. • Conduct research on various matching techniques (including rule-based and probabilistic) to identify optimal methods by application. • Research error measurement in matching techniques, including determination of error set and assumptions about causes. • Identify and evaluate the effectiveness of decennial address matching and unduplication applications. • Identify and evaluate the effectiveness of decennial person matching and unduplication applications. • Research and evaluate address and name standardization techniques. • Evaluate methods for unduplication, especially for difficult cases (i.e., directionals, such as SW (southwest) or NE (northeast)), during address matching. • Determine how to select the cutoff for probabilistic matching to optimize each application. • Determine if probabilistic matching techniques can be improved and better quantified as to matching leading to duplicates versus matching leading to omissions. • Identify what data are needed to improve the quality of matching. • Consider wide array of stakeholders, including Census Coverage Measurement, American Community Survey Office, Economic Programs, and Demographic Surveys.	
WBS # 7.101	Project Team Name: Enhancing Demographic Analysis	Team Lead/Project Manager: Jason Devine
	This project examines how administrative records can be used to enhance the demographic analysis program? • Exame how new sources of vital statistics data be incorporated into the current demographic analysis protocols. • Examine how additional race and ethnicity information can be incorporated into the current demographic analysis protocols, to allow further disaggregation by race/ethnicity.	

2020 Census Research and Testing Projects High Level Research Questions

WBS Number	Project Name	Fiscal Year Project Start	Research Question
3.101	Master Address File (MAF) Error Model	FY 2012	As the related Geographic Support Systems initiative proceeds, how will we determine the required level of quality needed in the address frame to conduct an accurate census and then measure the quality of the continually updated Master Address File (MAF) for that purpose?
3.102	Independent MAF Quality Assessment	FY 2012	As the related Geographic Support Systems initiative proceeds, how will we determine the required level of quality needed in the address frame to conduct an accurate census and then measure the quality of the continually updated Master Address File (MAF) for that purpose?
3.103	Local Update of Census Addresses (LUCA) Program Improvement	FY 2012	What modifications to the LUCA program are needed given the changes in partnerships accomplished in the Geographic Support Systems (GSS) Initiative?
4.101	Automating Field Activities (Infrastructure and Operations)	FY 2012	How can we modernize and increase the efficiency and utility of our field operational infrastructure?
4.102	Reducing and Improving Person Follow-up Operations	FY 2012	How do we leverage technology, variation in demographic/geographic response propensities, and new response modes to increase self-response, improve non-response follow-up data collection strategies, while maintaining overall quality?
4.103	Optimizing Self Response	FY 2012	How do we leverage technology, variation in demographic/geographic response propensities, and new response modes to increase self-response, improve non-response follow-up data collection strategies, while maintaining overall quality?
4.104	Workload Management Systems	FY 2012	How can we modernize and increase the efficiency and utility of our IT infrastructure, building cross-program capabilities?
4.105	Questionnaire Content, Design and Mode Study	FY 2012	What language support services and technologies across contact and enumeration methods are most effective in increasing response and reducing differential self-response?
4.106	Multiple Mode Interface Study	FY 2013	What is the impact of multiple response modes on interfaces?
4.107	Non-ID Processing	FY 2013	How can respondent-initiated responses be better linked to a geocoded address?

WBS Number	Project Name	Fiscal Year Project Start	Research Question
5.101	Coding, Editing, and Imputation Study	FY 2012	How can we improve coding, editing, and imputation, including whole household imputations, using administrative records and statistical techniques?
7.101 *	Enhancing Demographic Analysis	FY 2012	How can administrative records be used to enhance the DA program?
8.101	Improving Quality Control	FY 2012	How can we improve the effectiveness of Quality Control methods?
8.102	Alternative Administrative Records Composite	FY 2012	How can we best develop and maintain an independent administrative records composite and assess the quality of the records (best sources and methods)?
8.103 **	Integrated IT Enterprise Infrastructure	FY 2012	How can we modernize and increase the efficiency and utility of our IT infrastructure, building cross-program capabilities?
8.104	Privacy and Confidentiality Study	FY 2012	If a greater number of response modes and administrative records are cornerstones of the 2020 Census design, will we be able to effectively deal with potential privacy and confidentiality concerns?
8.105	Matching Process Improvement	FY 2012	If a greater number of response modes is a cornerstone of the 2020 Census design, will we be able to effectively unduplicate response data?
8.106	Contact Frame	FY 2012	How can we identify or develop alternative contact frames that can be geocoded to an address?
8.107	Supplementing and Supporting Non-Response with Administrative Records	FY 2012	How do we leverage administrative records (including commercial files) to significantly reduce decennial census cost while maintaining quality?
8.108	Field Staff Training	FY 2013	How can we improve the efficiency of training field staff to better utilize advanced training techniques to get better data at lower costs?
8.109	Logistics Management/Field Infrastructure Study	FY 2013	How can we improve logistics management processes associated with the large-scale deployment of equipment, materials, and personnel (e.g., optimal routing)?
8.110	Virtual LCO to LCO Test Bed	FY 2013	Given the enabling technologies and integrated research plans for the decennial census, what are the optimal designs for a virtual LCO and LCO test bed?

* Denotes a project that is inactive in FY 2013 due to current budgetary constraints.

** The scope of this project has been moved to project 2.105.

2020 Census Program Work Breakdown Structure (WBS)

WBS 1.0 Program Management Investments:
Project 1.101 – Strategic Documents
Project 1.102 – Program Management
Project 1.103 – Governance
Project 1.104 – Sourcing and Acquisition
Project 1.105 – Program Level Research and Testing
Project 1.106 – Budget Management
Project 1.107 – Schedule Management
Project 1.108 – Communications and Stakeholder Management
Project 1.109 – Performance Management and Measurement
Project 1.110 – Human Capital Management
Project 1.111 – Risk Management

WBS 2.0 Systems Engineering and Integration Investments:
Project 2.101: Technical Integration
Project 2.102: Decennial Architecture
Project 2.103: Requirements Engineering
Project 2.104: Systems Engineering and Integration Management Functions
Project 2.105: Enterprise IT Infrastructure and Architecture Integration
Project 2.106: Security and Privacy

WBS 3.0: Frame Investments:
Project 3.101: Master Address File (MAR) Error Model
Project 3.102: Independent Master Address File (MAF) Quality Assessment
Project 3.103: Local Update of Census Addresses (LUCA) Program Improvement
**Project 3.104: Frame Extract Evaluation
**Project 3.105: MAF/TIGER Business Rules Improvement
*Project 3.187: Census Frame: Field Test Support
**Project 3.188: Census Frame: 2020 Transition and Early Planning
*Project 3.189: Census Frame: 2020 Tests and Experiments

WBS 4.0: Enumeration Investments:
Project 4.101: Automating Field Activities (Infrastructure and Operations)
Project 4.102: Reducing and Improving Person Follow-up Operations
Project 4.103: Optimizing Self Response
Project 4.104: Workload Management Systems
Project 4.105: Questionnaire Content, Design and Mode Study – (note: Due to current year budget reductions, this project is inactive until fiscal year 2014)

Project 4.106: Multiple Mode Interface Study
Project 4.107: Non-ID processing
*Project 4.187: Enumeration: Field Test Support
**Project 4.188: Enumeration: 2020 Transition and Early Planning
*Project 4.189: Enumeration: 2020 Tests and Experiments
Project 4.195: Enumeration Administrative Support

WBS 5.0: Response Processing Investments:
Project 5.101: Coding, Editing, and Imputation Study

WBS 6.0: Data Products Investments:
**Project 6.101: Data Access and Dissemination System (DADS)

WBS 7.0: Evaluative Programs Investments:
Project 7.101: Enhancing Demographic Analysis (DA) – (note: Due to current year budget reductions, this project is inactive until fiscal year 2014)
**Project 7.102: Census Coverage Measurement/Post-Enumeration Survey (CCM/PES) Improvement Study
**Project 7.103: Alternative Census Coverage Measurement (CCM) Study

WBS 8.0: Infrastructure Investments:
Project 8.101: Improving Quality Control
Project 8.102: Administrative Records Fitness-For-Use
Project 8.103: Integrated IT Enterprise Infrastructure – (note: upon the receipt of a final FY13 budget allocation, project 8.103 will merge with project 2.105 per Change Request #69 requesting the combining of the two projects due to similar scope.)
Project 8.104: Privacy and Confidentiality Study
Project 8.105: Matching Process Improvement
Project 8.106: Contact Frame
Project 8.107: Administrative Records Modeling
*Project 8.108: Field Staff Training
*Project 8.109: Logistics Management/Field Infrastructure Study
*Project 8.110: Virtual Local Census Office (LCO) and LCO Test Bed
*Project 8.187: Infrastructure: Field Test Support
**Project 8.188: Infrastructure: 2020 Transition and Early Planning
*Project 8.189: Infrastructure: 2020 Tests and Experiments
Project 8.195: Infrastructure: Administrative Support
*Project 8.186: Infrastructure: System Reuse

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* = FY 13 project
** = FY14 project

Research and Testing Phase Field Test Reference Sheet

Updated: 11/28/2012

Field Test Numbers	Field Test Name	Purpose	Size	Timing	Data Collection Modes/Support Systems
9 – 13	Quality Control Test *	Quality Control: Test Reinterview (enumeration) and dependent quality control (listing) instruments	Less than 1,000 housing units per test	2/25/13 - 5/24/13	Mobile Devices -Listing and Mapping Application (LiMA) -Enumeration
15	2013 National Census Contact Test (2013 NCCT)	- Measure the initial coverage of Contact Frame information - Test proposed enhancements to Non-ID processing.	Contact up to 40,000 housing units	1/7/13 - 1/25/13	Computer Assisted Telephone Interviewing (CATI); print/mail advance letter
26	2014 National Census Contact Test (2014 NCCT) *	- Measure the initial coverage of Contact Frame information and test ability to link alternate contact information to addresses in the MAF/TIGER Database (MTDB). - Test live geocoding and address matching for Non-ID cases.	Contact up to 40,000 housing units	FY14 Q1	CATI; Internet self-response; TQA; Data Processing; possible printing and mailing of questionnaires; Geographic processing for Non-ID; applications for pushing out emails and text messages; workload management system (WMS)

17/18 & 20	2013 Census Test	- **17/18**: Test notification and feasibility of contact strategies and various modes. - **20**: Test high-level feasibility of self-response modes and strategies by different demographic and geographic variables to increase self-response. Non-responders will be used to test contact alternatives for NRFU, such as telephone, administrative records, and person visit.	17/18: 60,000 20: 100,000 initial sample w/ 40,000 for NRFU	17/18 & 20 mailout: 5/13/2013; Census Day: 5/15/13; NRFU (T20): 6/24-8/2/13	17/18 and 20: Internet and CATI for response; WMS; apps to push email messages and text messages; data capture; data processing; telephone questionnaire assistance (TQA); printing/mailing of questionnaires 20: Mobile devices; Enumeration application; op. control systems (OCS); applicant and payroll (DAPPS); universe control; response processing
22	MAF Error Model Validation Test *	Evaluate MAF quality using newly developed MAF error model .	Appox. 60,000 housing units	FY14 Q2	Mobile device w/ LiMA application; WMS; OCS; DAPPS; help desk for field staff; transmission support
28	2014 Systems Integration Test *	Test integration of workload management; field infrastructure, logistics and training; listing, enumeration, and QC on a mobile device; and use of ad rec data.	N/A	FY14 Q2	Mobile devices; LiMA application; Enumeration application; CATI; Internet; WMS; DAPPS; universe control (UCM); response processing system (RPS); cost and progress (C&P); matching software (MaRCS); transmission support; virtual local census office; data processing; possibly printing, mailing, and data capture

29	2014 Census Test *	To narrow possible approaches for self-response, non-response, workload management, and census processing.	1M housing units	FY14 Q3	Mobile Devices; Enumeration application; CATI; Internet; WMS; DAPPS; printing; mailing; data processing; paper data capture; help desk; IVR; phone and online support system; C&P; RPS; Non-ID processing (MAGIC, SUMO, GeoStan); system for coding, editing, imputing; app to push out emails and text messages; MaRCS

* - Indicates an unofficial test name